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ABSTRACT

The paper is intended to help rehabilitation professionals use computer hardware and software in serving their clients and improving their professional associations and practices. Four types of computer applications are addressed (examples in parentheses): (1) assistive devices (environmental control systems, writing devices); (2) software to help in the rehabilitation process (computer-assisted learning systems); (3) client assessment software (computer-assisted psychological/vocational testing); and (4) software to enhance the management of rehabilitation organizations (word processing and report writing systems). In each of these areas, five processes necessary for successful use of computer technology are considered: goal definition, search, strategic planning, implementation, and maintenance. (CL)

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Rehabilitation And The Computer: How To Find What You Need

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As in all areas of work and human affairs today, the problem in rehabilitation is not determining whether the computer can help solve problems and enhance success, but how to search through the avalanche of information for the right kinds of hardware and software to meet particular needs. We know the computer age is here, but finding what you need to meet certain objectives is not easy. In many ways, we're all the victims of the remarkable growth in the computer field -- there's a constant deluge of new developments and the superstructure to organize them hasn't kept pace.

The purpose of this presentation is to provide a very rough kind of superstructure for rehabilitation professionals, to help in searching for the computer hardware and software to serve their clients, and to improve their professional practices and the organizations in which they work. It covers four types of computer applications:

* assistive devices for disabled people
* software to aid in the rehabilitation process
* client assessment software
* software to aid in the management of rehabilitation organizations

The presentation also will examine five processes required in all these areas to make successful use of computer technology:

* goal definition - deciding what you want the computer to do for you - more than half of all failures in computer technology stem directly from inadequate or inappropriate goal definition
* search - identifying the right hardware and software - and search these days means being very wary of the cost of

consuming information; we simply don't have time to look at every possible input so we need strategies that help us be successfully selective

* strategic planning - for the structural, financial and user acceptance dimensions of integrating the computer into meeting a need or providing a service
* implementation - how to convert the strategic plan into an actual operation that does what you want it to
* maintenance - how to keep the system running smoothly and how to upgrade and improve it over time

Assistive Devices

These include:

* environmental control systems -- which use the computer to control lights, appliances, doors, windows, etc.
* speech devices -- computer-converted speech for nonvocal clients
* writing devices -- from special adapted keyboards to single key systems; even people who can move one muscle can have complete access to the computer today with the right interfaces
* telephone systems for the deaf and hearing impaired
* blind and vision impaired systems -- which can convert printed words into speech, braille or large print
* microprocessor controlled assistive devices - for mobility, manipulation of physical objects, etc.

Almost everyone in the general population already has some kind of computer-controlled assistive device in office, car or home. For

exploration and planning and also for vocational evaluation, including aptitudes, work experience, job interests, specific job-related skills such as language and mathematics. The client is assessed directly on the microcomputer, or sometimes with paper and pencil and performance tests, with client results then fed into the computer, which evaluates performance against a large database. A relatively complex and complete report is the result.

* job matching systems -- the client fills out a form or enters data directly on a terminal about his/her characteristics and interests and job history. Responses are compared by the computer with a database and matches are made for the client with appropriate job types or to actual local job or training openings

These systems are now being widely used as time-saving devices by state VR agencies and many other rehabilitation organizations. There have been both system difficulties and user acceptance problems in some cases, but these systems now are in rather wide use and seem here to stay.

Management Applications

These include:

* word processing systems -- a standard tool in almost all offices now, for preparation of letters, memos, etc.
* report writing systems -- software which custom-formats information into report forms, sometimes with highly technical specifications
* management information systems -- computer software which

disabled persons, these devices replace muscle, mobility, and sensory system loss as a consequence of disability

Rehabilitation Process

These include:

* computer assisted learning systems: e.g., the PLATO system for learning independent living skills
* computer-assisted rehabilitation counseling software, which actually guides a client working on a computer terminal through a counseling process. (These systems are still in the experimental stage but commercial application is near.)
* cognitive rehabilitation systems for assisting in the complex relearning process (language, thinking, perception, coordination) for stroke and brain injury patients

Today almost every part of the rehabilitation process--assessment, diagnosis, vocational exploration, counseling and placement -- are being computerized. So are psychological support services for those clients needing them.

These have advantages of 24-hour availability, endless capacity to repeat learning steps, and more. They are also costly, and may be seen inappropriately as a "magic pill" solution for much larger and more complex rehabilitation issues.

Client Assessment

These include:

* computer-assisted psychological/vocational testing -- the MMPI, SCII, and many other tests are now computerized, not only for scoring but also for interpretive reports.
* client assessment systems -- packages for prevocational

maintains and manipulates information needed for the operation of an organization. The trend is towards integrated systems, with operation on a micro or mini-computer depending upon size and needs of the organization. Networking of computer installations permits a common database and operating system for multistation organizations.

Types of functions covered by an MIS include:

- financial - accounts payable and receivable, billing, financial reporting. staff payroll, fringe benefits, staff database
- client payroll (for workshops)
- client activities (productivity, quality)
- client behavior recording
- contracting/bidding
- development/fundraising
- planning
- database maintenance
- client records
- research

Software systems are available which are custom-tailored for state VR agencies; others are specialized to private-for-profit organizations, some for facilities and workshops, and some for rehabilitation hospitals.

Goal Definition

As already stated, too hasty implementation without defining goals is a major cause of failure in computer systems. The first step in good planning is goal definition:

* what problems need to be solved?

* why haven't previous solutions worked and how will the computer be able to do it differently?
* what will the operation of the organization or the life of the individual "look like" post the computer?

Search

Information resources that may be of value include the following:

Books

NATIONAL DIRECTORY OF REHABILITATION FACILITIES USING COMPUTERS, by Paul W. McCray and Thomas F. Blakemore. Available ($9.50) from Publications Office, University of Wisconsin-Stout, Menomonie WS 54751.

RRN INNOVATION DIRECTORY: COMPUTER APPLICATIONS, by Thomas E. Backer and Marian W. Trotter. Available from Regional Rehabilitation Network, 1849 Sawtelle Boulevard, Suite 102, Los Angeles CA 90025.

NONPROFIT SOFTWARE DIRECTORY and COMPUTER FUNDING DIRECTORY. Two companion volumes providing in-depth reports on 200 programs of grants and in-kind gifts for nonprofit organizations wishing to computerize, and 300 software packages for nonprofits. For more information contact Public Management Institute, 358 Brannan Street, San Francisco, CA 94107.

A DIRECTORY OF MICROCOMPUTER SOFTWARE IN THE HUMAN SERVICES, edited by Joseph F. Doucette. Available from Computer Consulting and Programming Consultants, 7553 Canal Plaza, Portland, Maine 04112.

MICROCOMPUTER RESOURCE BOOK FOR SPECIAL EDUCATION, by Dolores Hagen, Closing The Gap, Inc., P.O. Box 68, Henderson MN 56044.

Book Chapters and Articles

RRN Series on Computers in Rehabilitation, a collection of articles on computer applications for rehabilitation organizations. Available from RRN, address above.

Rehabilitation and computerization, by Gary Golter. In ANNUAL REVIEW OF REHABILITATION, Volume 5, edited by Elizabeth L. Pan, Shelia S. Newman, Thomas E. Backer and Carolyn L. Vash. New York: Springer Publishing Company, in press.

Computer access and applications to career counseling with vocational rehabilitation clients, by B.T. McMahon, E.J. Burkhead & J.P. Sampson. Available from NARIC, telephone number below.

Computer technology in rehabilitation counseling, by P. Schmitt & B. Growick. Rehabilitation Counseling Bulletin, 1985, 28, 233-241.

Newsletters

COMPUTER USE IN SOCIAL SERVICES NETWORK (CUSSN) nNEWSLETTER. Contact: Dick Schoech, CUSSN Coordinator, University of Texas - Arlington, P.O. Box 19129, Arlington TX 76019.

SMALL COMPUTERS FOR NONPROFITS. Contact: California Research Center, P.O. Box 92131, Pasadena, CA 91109.

AAMSI NEWS. Newsletter of the American Association for Medical Systems and Informatics. Contact: 4405 East-West Highway, Suite 402, Bethesda, MD 20814.

THE CATALYST. Contact: Western Center for Microcomputers in Special Education, 1259 El Camino Real, Suite 275, Menlo Park, CA 94025.

MICRO/PSYCH NETWORK. Contact: Professional Resource Exchange, P.O. Box 15560, Sarasota FL 34277.

COMPUTERS IN PSYCHIATRY/PSYCHOLOGY. Quarterly journal published by Marc Schwartz, MD, 26 Trumbull Street, New Haven, CT 06511.

There are also many periodicals on computer applications available in the commercial marketplace; at least some are likely to be at any newsstand.

Commercial Enterprises

Computer manufacturers such as IBM, Apple.

Software distributors.

Computer stores such as Computerland.

Search Services

NATIONAL REHABILITATION INFORMATION CENTER. Contact: 800/34-NARIC.

SOFTWARE CLEARINGHOUSE FOR HUMAN SERVICES. Contact: Walter LaMendola, Graduate School of Social Work, University of Denver, Denver CO 80208.

SPECIAL EDUCATION SOFTWARE CENTER. Contact: 800/327-5892.

Research Centers

School district/special education resource centers for computer applications.

University/college based resource centers.

User Groups

National, regional and local groups of users of computers in specific subject areas, such as Los Angeles-based Computer Users in Speech and Hearing of Los Angeles (CUSHLA).

Special Resources

Rehabilitation Engineering Centers, funded by National Institute of Handicapped Research, Department of Education.

Sensory Aids Foundation, Palo Alto, CA, a nonprofit organization which also publishes Sensus, a journal including reviews of software relevant to rehabilitation of persons with sensory disabilities.

Closing The Gap, Inc., a product and services organization, address given above. Organizes an annual conference on computers on special education and rehabilitation.

Strategic Planning

Once goals have been set for implementing a computer system and some essential information resources have been identified, the most critical step for proper implementation is the creation of a strategic plan for computerization. Ideally, this plan should be the result of collaboration among all staff who will be using the computer system once it is in place.

Major questions the strategic plan should address include:

* how will the computer system be financed? (out-of-pocket; public or private grant; donated hardware; credit, including credit supplied by computer hardware manufacturer/distributor)?
* will the system be leased or purchased?
* where will the hardware be housed?
* to what extent will software need to be customized?
* what staff persons (or others outside the agency) need to be involved in arranging system implementation?
* what problems of staff resistence have to be overcome?
* how will the new computer system interface with existing programs and resourses?

* what role, if any, is there for a computer consultant in the system implementation?
* if a consultant is to be retained, what contractual arrangements need to be worked out and how can the proper consultant be identified?
* what other organizations in the area have had experience with the hardware and software being considered for implementation?

Implementation

One of the major challenges in implementing any computer system is in de-bugging it. Implementers should start with the assumption that considerable de-bugging will in fact be necessary and plan for it. A computer consultant often can be helpful in this regard.

Maintenance

The needs of the organization with respect to a computer system will not remain static over time. Upgrading and response to changing organizational conditions will be needed. Also, there will be long-term maintenance and repair issues which should be negotiated up front with the agency providing service for system. Some functions now are simple enough that they can be handled by the rehabilitation organization's personnel, with proper training. Training courses and materials are available for staff to learn these repair techniques.

* * *

Following these steps -- which, granted, require additional time and effort will maximize the chances for success when a rehabilitation organization implements a computer system. Consistant experiences of adopting organizations have shown that hasty or unplanned implementation leads to problems later.

Note: In the Region IX States of Arizona, California, Hawaii and Nevada, technical assistance consultation on innovative client assessment and management information system software is available through the federally-funded RRN project.

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